Introductory lecture

CSIT114/CSIT814: Systems Analysis

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This Week

Background

- Subject Overview
- Assessments

Content Introduction

- Introduction to System Analysis

EMERGENCY Procedure info…

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Lecturers:

Subject Coordinators:
Dr. Lei Ye (SWS campus)
Dr. Guoxin Su (Wollongong campus)
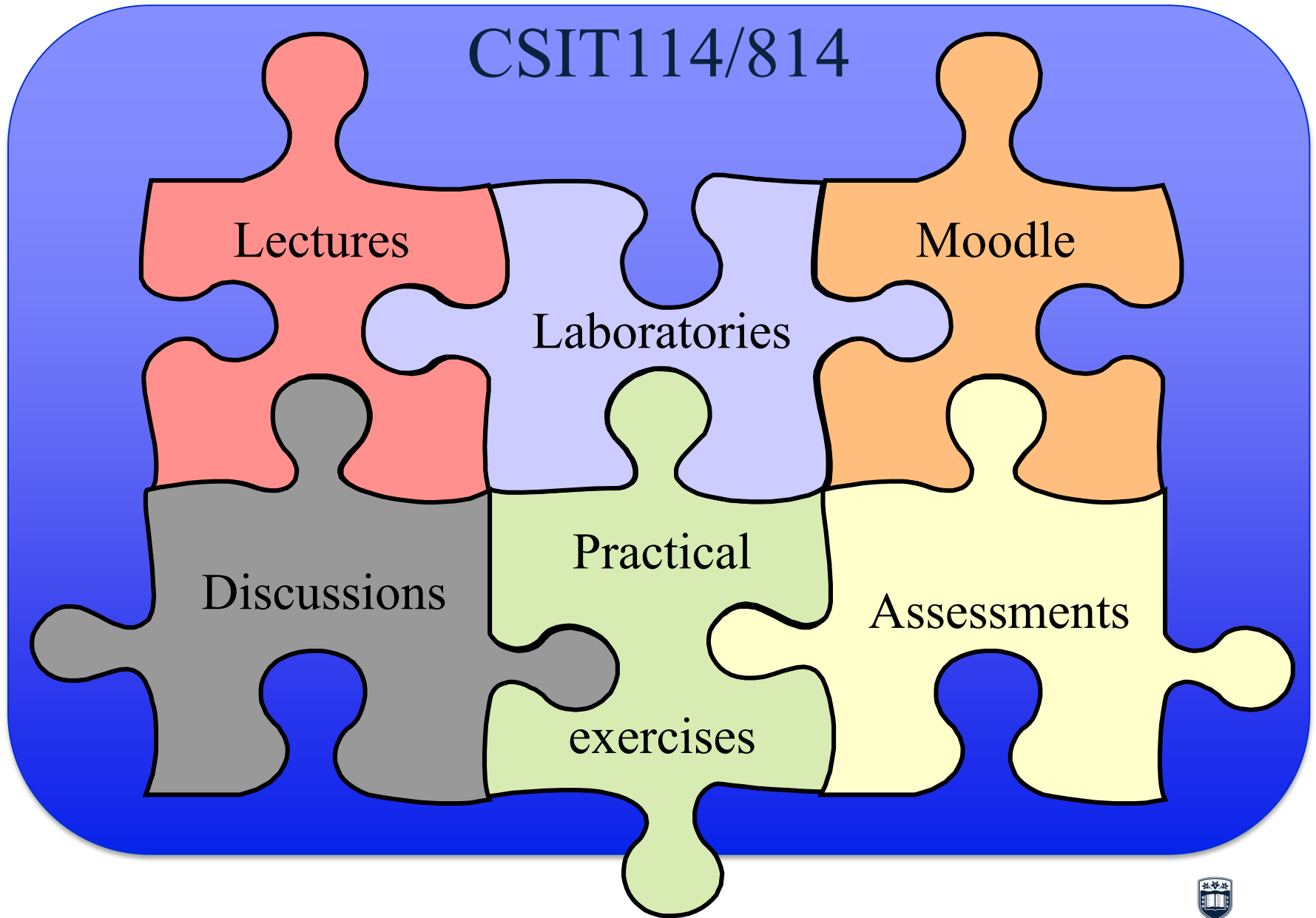
Subject Description

This subject provides an introduction to different techniques and technologies for understanding and specifying what a computer based information system should accomplish. It examines the complementary roles of systems analysts, clients and users in a system development life cycle. Students will learn different *fact-finding techniques* to elicit system requirements and how to develop business models, data and process models, and object models representing a system. Students will also make use of a Computer Aided Software Engineering (CASE) tool to build those models that capture the specifications of a system.

Subject Learning Outcomes

On successful completion of this subject, students will be able to:

1. Analyse the complementary roles of different stakeholders including clients, users, and analysts in the development of computer based information systems.

2. Identify system requirements using different fact-finding techniques.

3. Perform analysis of computer-based information systems, and present a system description using different modelling approaches such as data and process models, business models, and object models.

4. Demonstrate an appreciation of CASE tools as an aid to systems modelling.

5. Work in a group to apply the knowledge and skills presented in this subject to typical system analysis scenarios

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CSIT114/814

Lectures

Laboratories

Moodle

Discussions

Practical exercises

Assessments

UOW Graduate Qualities

- Informed

- Independent learners

- Problem solvers

- Effective communicators

- Responsible

- Also: Team Work – because most of our graduates work in teams to solve problems using different skill sets

This Subject

- Credit Points: 6CP
- Contact hours per week:
  - 2 hours lecture
  - 2 hours laboratory
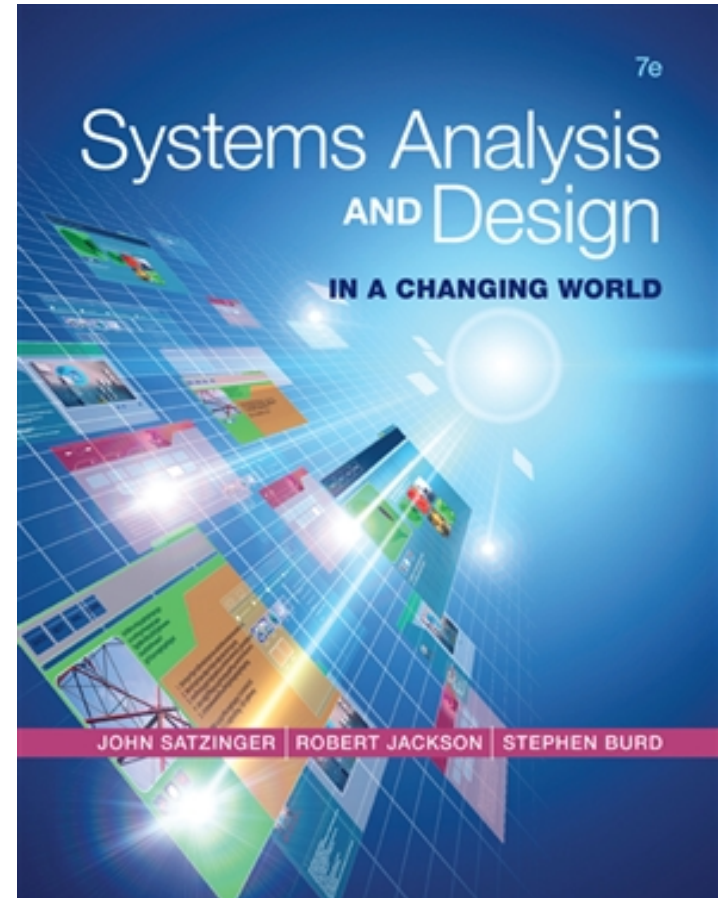
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Sending emails to UOW Staff

- Must be professional!
  - Use your @uowmail.edu.au account
  - Clearly identify purpose in the 'subject'
  - *UOW Staff: Identify your student number and full name*

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Textbook

Satzinger, J., Jackson, R. & Burd, S. (2016) *Systems Analysis And Design In A Changing World*. 7th Edition, Boston, Mass. Cengage Learning.

Three supplementary online chapters of the book are available on Moodle.

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	Topic	Reading
1	Subject Overview and Introduction	Chapter 1
2	Stakeholder Analysis and Project Management	Chapter 11 & A
3	Systems Development	Chapter 10
4	System and Business Requirements	Chapter 2
5	Understanding Users	Chapter 3
6	Domain Modelling	Chapter 4
7	**Mid-Session Quiz**	
8	System Modelling I	Chapter 5 & B
9	System Modelling II	Chapter 12
10	Essentials of System Design I	Chapters 6
11	Essentials of System Design II	Chapters 7
12	Deployment the New System	Chapter 14
13	Subject revision	

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Details of assessments

- Assessment details will be available on the subject's Moodle site
  - Instructions & Marking guide
  - Additional resources required (e.g. templates, readings)
- All individual assignments must be completed independently
- Plagiarism in any assignment or exam may result in a FAIL for that assignment or exam

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Assessments (CSIT114)

	%	Type	Due Date	SLOs
Lab exercises (practical assessment)	10% (5% each)	Individual	Conducted in your enrolled lab (Weeks 4 and 11)	1 - 4
Mid-session quiz	15%	Individual	Conducted in the lecture week 8	1 - 3
Group assignment - Part A: User Evaluation Report	10%	Group	Week 6	1 - 5
Group assignment - Part B: Progress Interview	5%	Group	Conducted in your enrolled lab (Week 8)	1 - 5
Group assignment - Part C: System Description and Modelling Report	20%	Group	Week 12	1 - 5
Final examination	40%	Individual	TBA	1 - 4

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Assessments (CSIT814)

	%	Type	Due Date	SLOs
Lab exercises (practical assessment)	10% (5% each)	Individual	Conducted in your enrolled lab (Weeks 4 and 11)	1 - 4
Mid-session quiz	15%	Individual	Conducted in the lecture week 8	1 - 3
Group assignment - Part A: User Evaluation Report	10%	Group	Week 6	1 - 5
Group assignment - Part B: Progress Interview	5%	Group	Conducted in your enrolled lab (Week 8)	1 - 5
Group assignment - Part C: System Description and Modelling Report	10%	Group	Week 12	1 - 5
Final examination	50%	Individual	TBA	1 - 4

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Notes on Assessment

- Lab exercises
  - This subject will have 2 practical assessments using UMLet/LibreOffice and MS Project. These exercises are to be conducted independently during your enrolled lab.

- Mid-session quiz
  - The mid-session quiz will consist of short answer questions and will be conducted in the lecture in week 8. This quiz tests your knowledge and understanding of the material presented in weeks 1 - 7.

Notes on Assessment

- Group assignment
  - In groups of 3-5 students you will need to analyse a business issue and develop a potential solution. This assessment is submitted over 3 stages. Assessment for the assignment is based on the argument(s) developed and sustained for your new system, the quality of the research used to support the system developed, the ability to interpret what you have researched and the fluency of your written report.

- Final examination
  - The final examination tests your knowledge and understanding of all material presented.
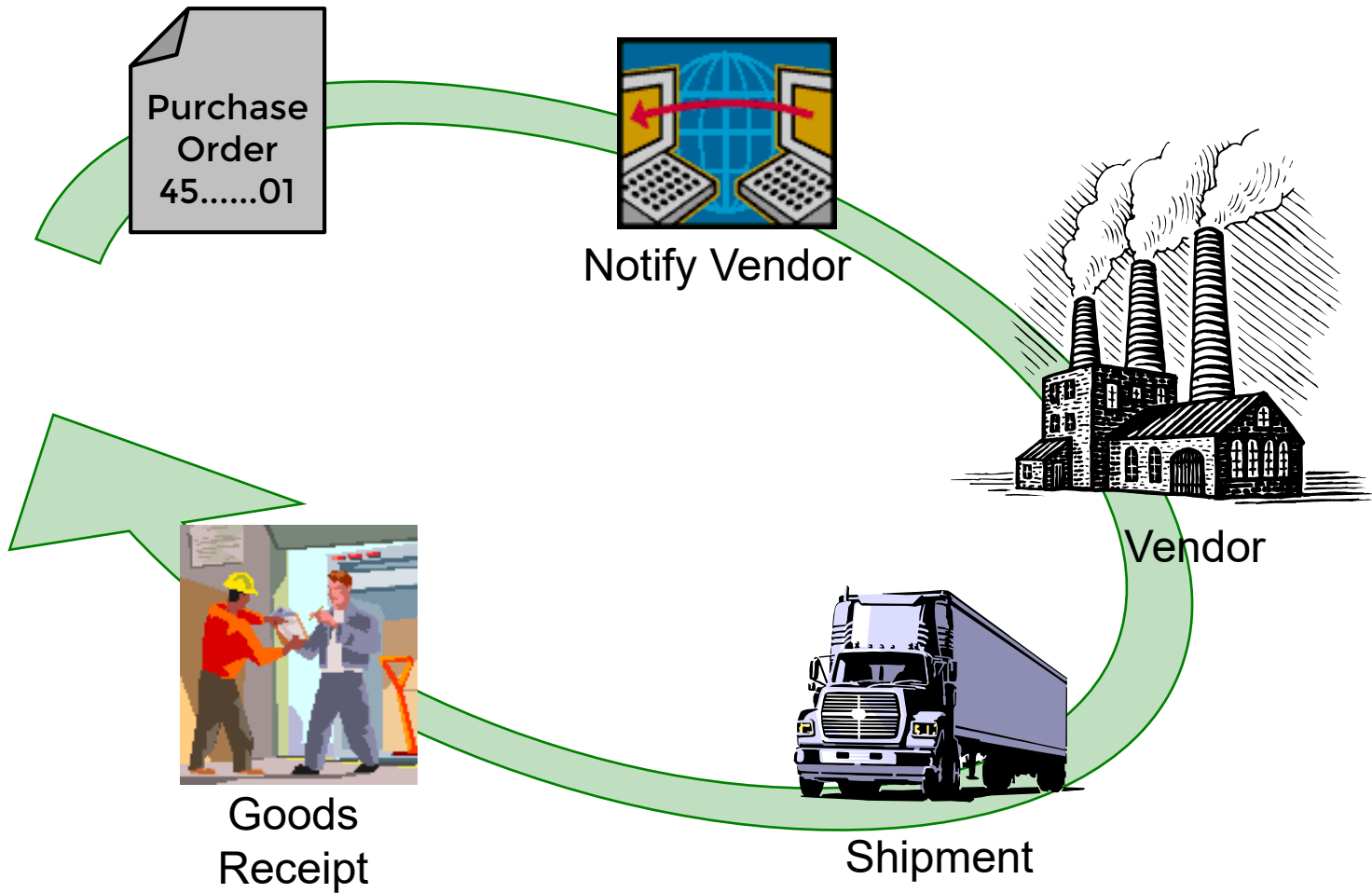
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Notes on Assessment

- If you cannot submit an assignment on time it must be submitted to the Subject Coordinator as soon as possible

- Unless academic consideration is granted, late submissions will get a penalty of 25% of the assessment mark per day including weekends. Work more than 4 days late will get a mark of zero

- Requests for Academic Consideration must be requested via SOLS

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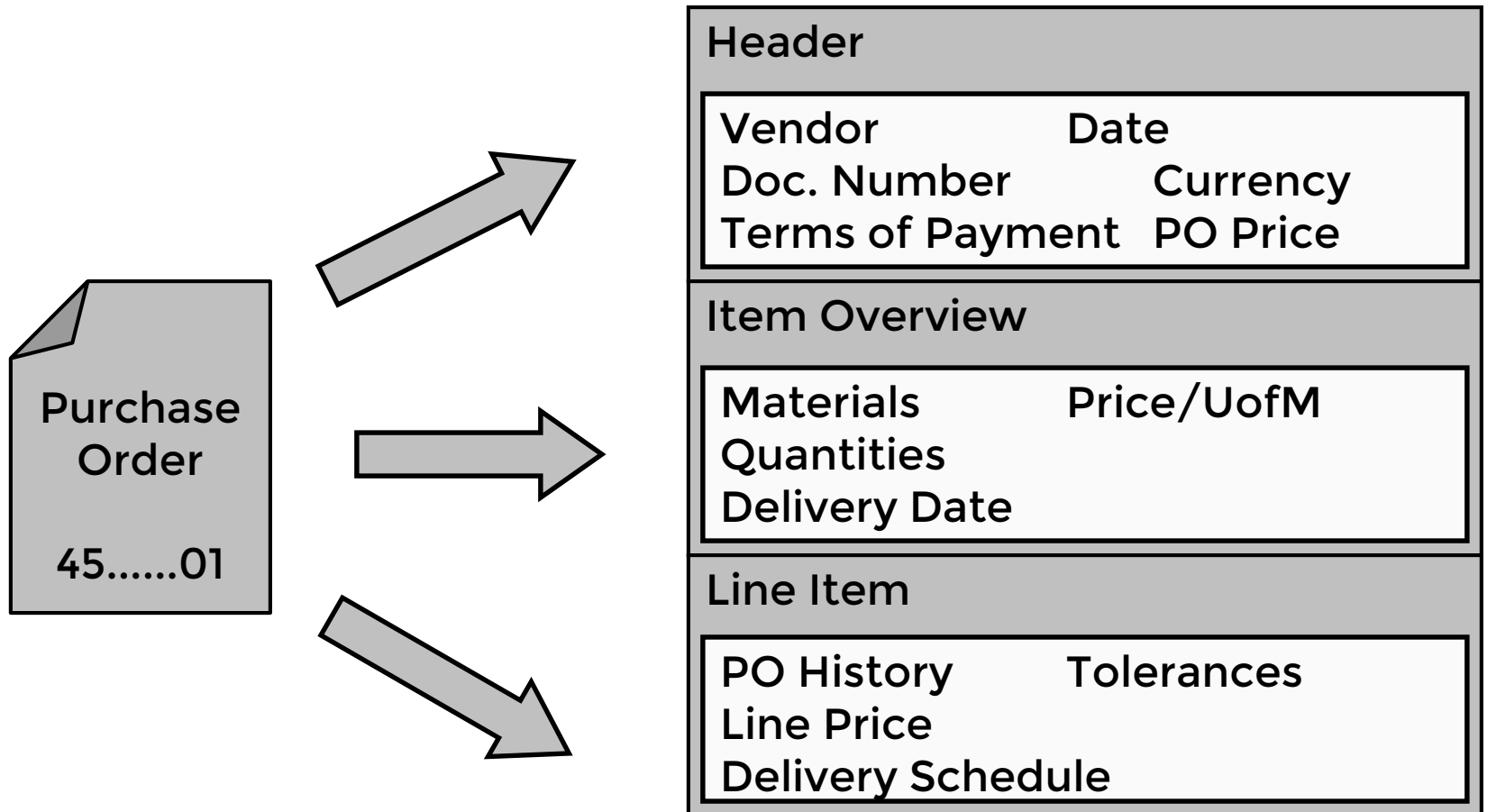OF WOLLONGONG
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SAP Activities

- SLO3: Perform analysis of computer-based information systems, and present a system description using different modelling approaches such as data and process models, business models, and object models.
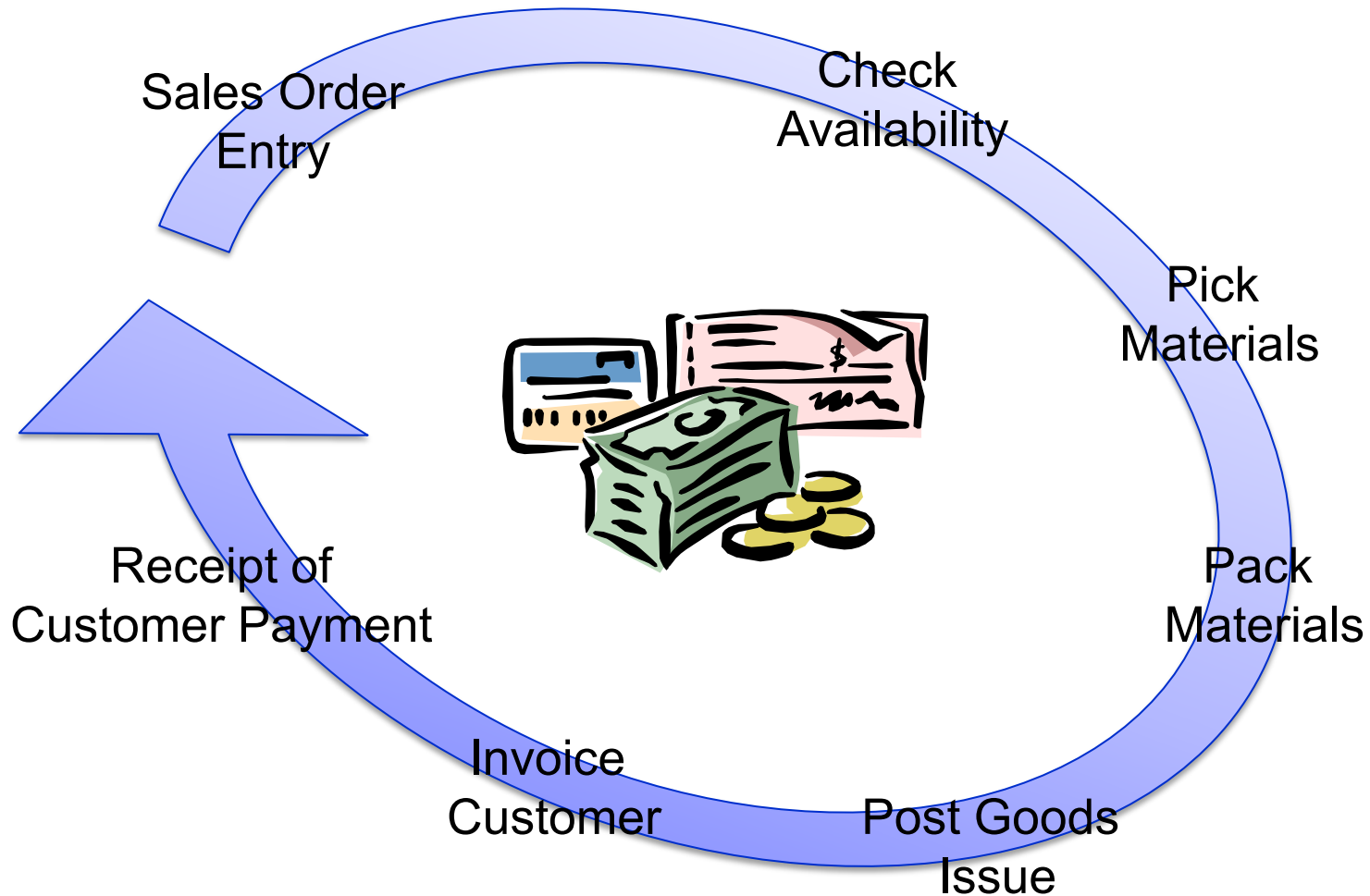
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Goods Receipt

Purchase Order Structure

Purchase Order

45......01

Header

Vendor	Date
Doc. Number	Currency
Terms of Payment	PO Price

Item Overview

Materials	Price/UofM
Quantities	
Delivery Date	

Line Item

PO History	Tolerances
Line Price	
Delivery Schedule	

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Sales Order Process (Order-to-Cash)

Sales Order Entry

Check Availability

Pick Materials

Pack Materials

Post Goods Issue

Invoice Customer

Receipt of Customer Payment

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Enterprise Resource Planning (ERP)

Inventory · Production · Accounting · Purchase · Human Resources · Production Planning · Engineering · Sales · Business Intelligence · Delivery · Customer Portal (under development)

Information System

- Computer application – a computer software program that executes on a computing device to carry out a specific set of functions

  – Modest scope

- Information system – a set of interrelated components that collects, processes, stores, and provides as output the information needed to complete business tasks

  – Broader in scope

  – Includes database and related manual processes

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Information System Components

Information Systems

People

Social Environment

Context-of-use

Software

Processes

Hardware

Data

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Question

- Who designed and developed the system?

- How do they know the requirement?

- How do they know the system is good enough?

- How to improve the design?

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System Analysis & Design

- Systems analysis – those activities that enable a person to understand and specify what an information system should accomplish

- Systems design – those activities that enable a person to define and describe in detail the system that solves the need

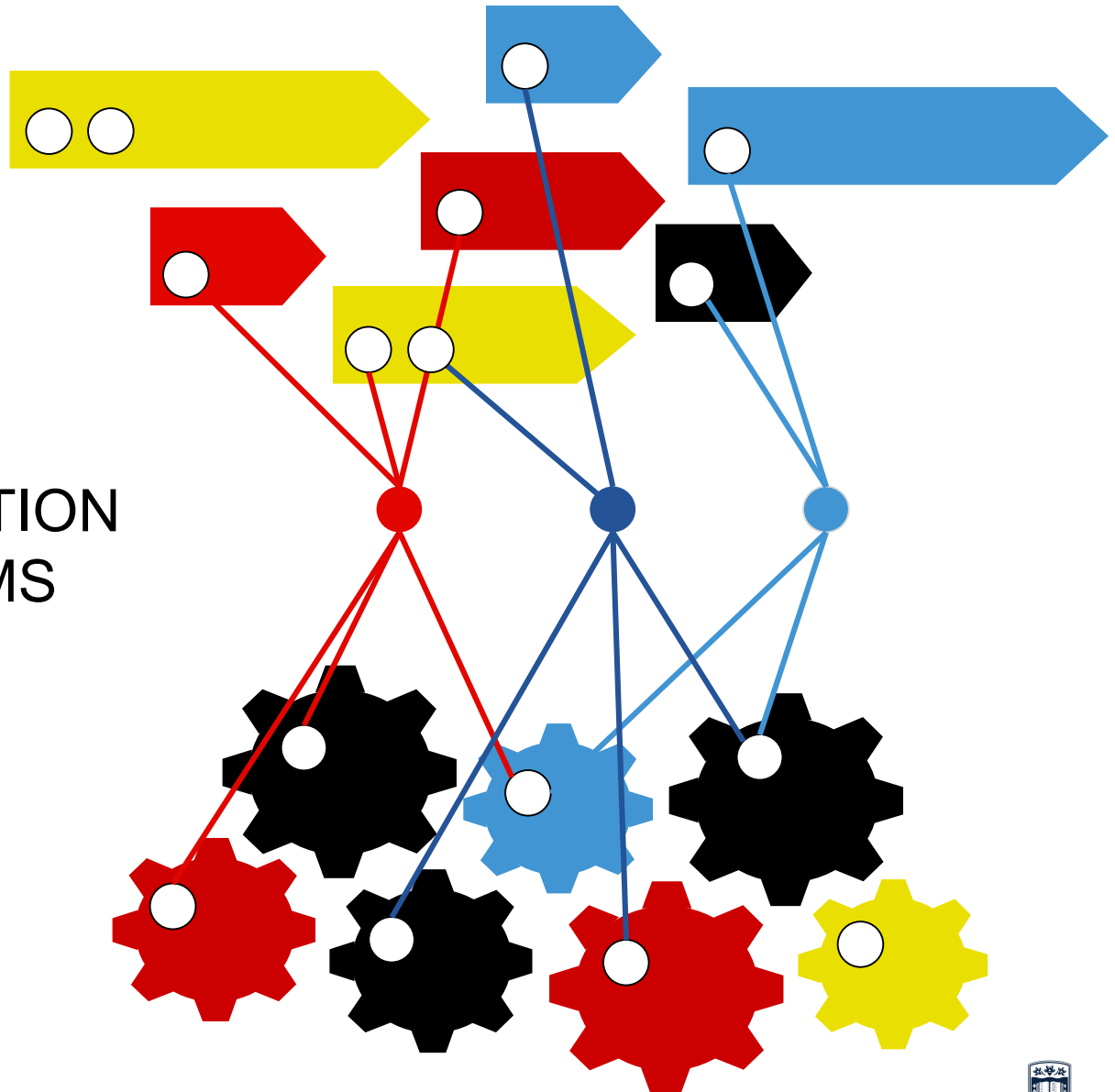 - How the system will operate

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What Are "Processes"?

- A specific ordering of [work] activities across time and place, with a beginning, an end, and clearly identified inputs and outputs.

  – Processes that use the information system Processes that develop this system

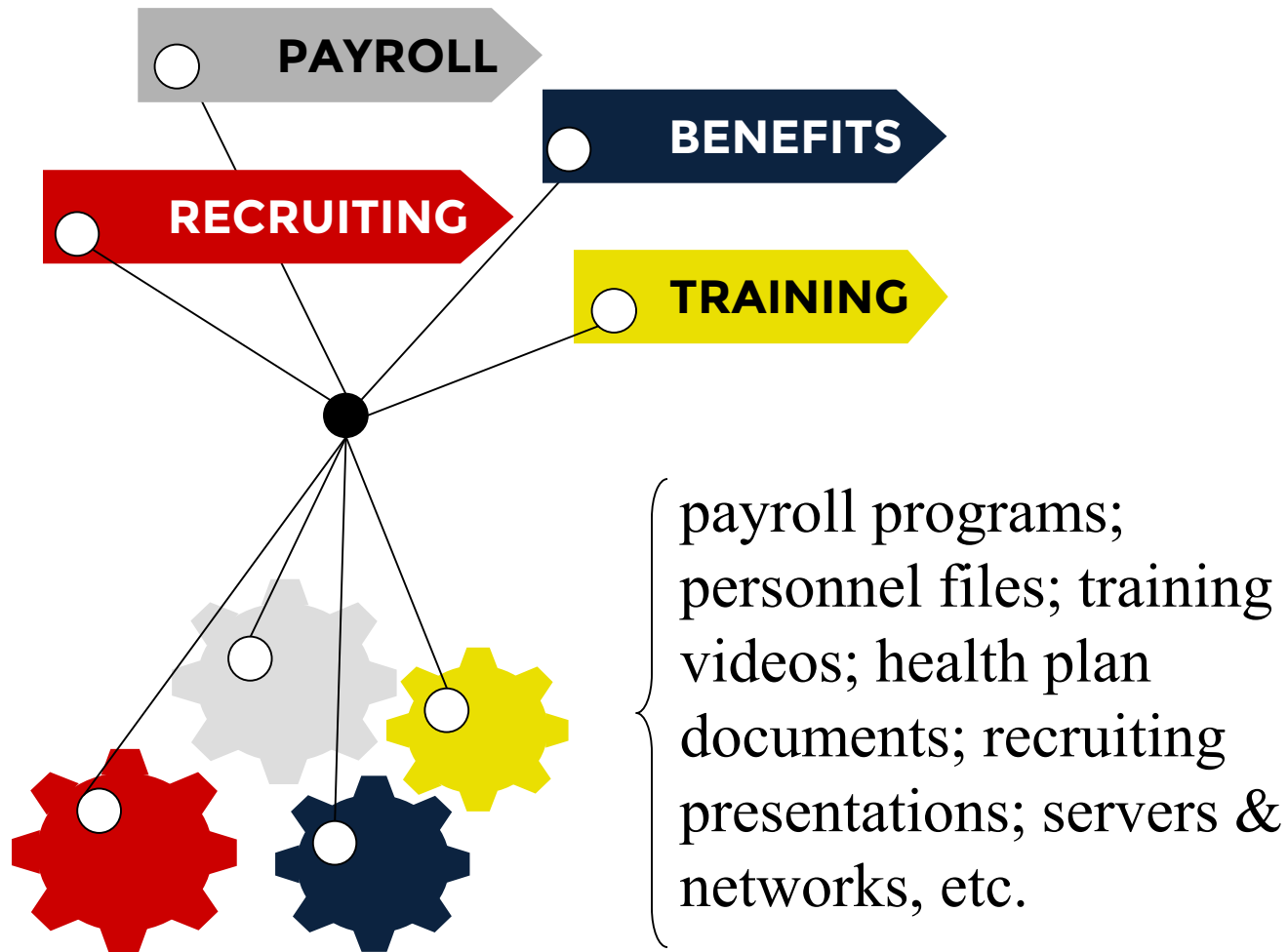 – The two kinds of processes are inter-related with each other.

Processes

INFORMATION
SYSTEMS

Resources

Example: HR Information System

PAYROLL

BENEFITS

RECRUITING

TRAINING

payroll programs; personnel files; training videos; health plan documents; recruiting presentations; servers & networks, etc.

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Development Process

Understand the need (business need)

↓

Capture the vision

↓

Define a solution

↓

Communicate the vision and solution

↓

Build the solution

↓

Confirm that the solution meets the need

↓

Launch the solution system

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System Development Life Cycle (SDLC)

The process consisting of all activities required to build, launch, and maintain an information system. Six core processes are:

1. Identify the problem or need and obtain approval
2. Plan and monitor the project
3. Discover and understand the details of the problem or need
4. Design the system components that solve the problem
5. Build, test, and integrate system components
6. Complete system tests and then deploy the solution

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Systems Development Life Cycle (SDLC)

- Project – a planned undertaking that has a beginning and end and that produces some definite result
  – Used to develop an information system
  – Requires knowledge of systems analysis and systems design tools and techniques
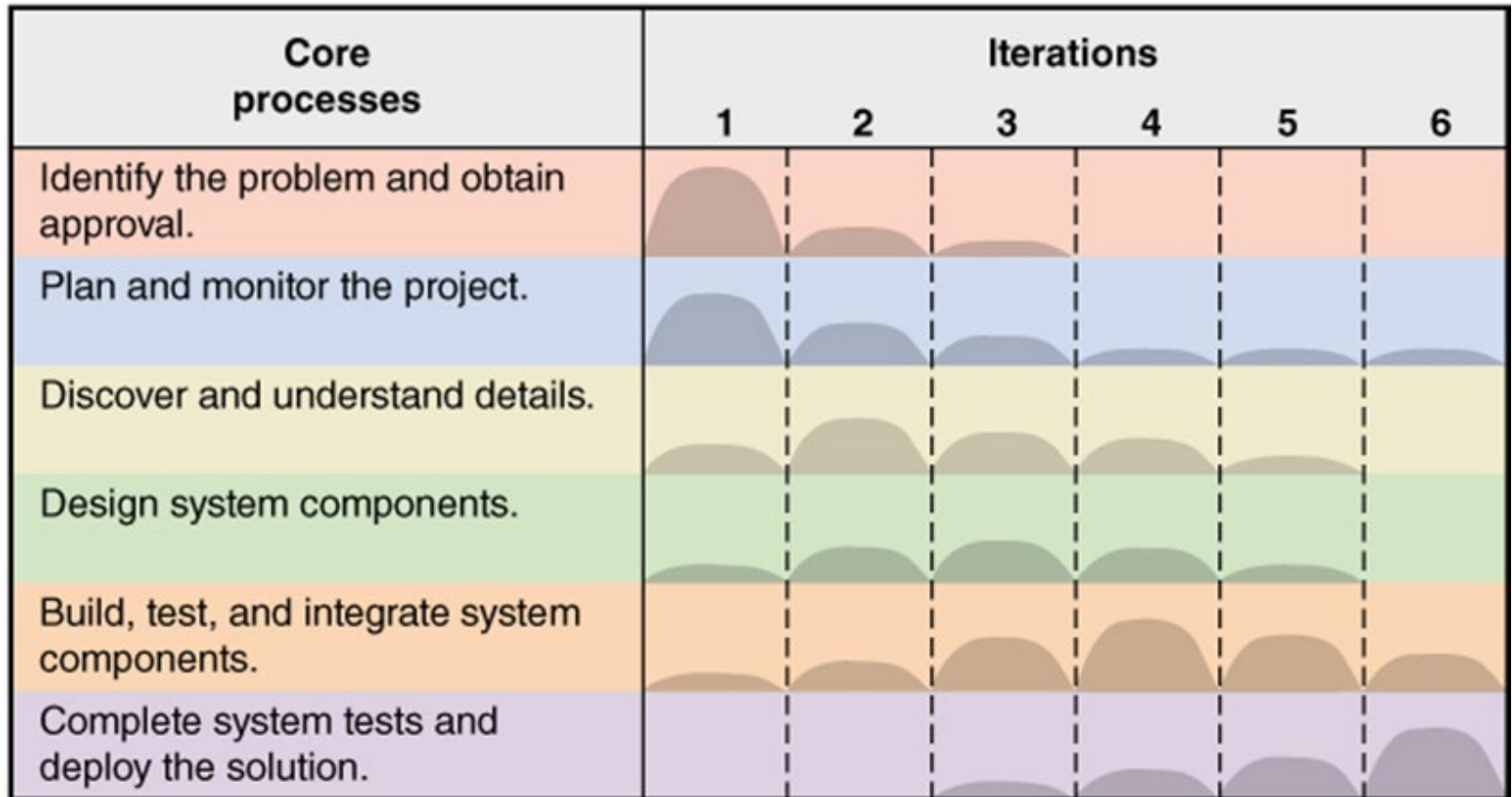
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System Development Life Cycle (SDLC)

- System development process – the actual approach used to develop a particular information system (aka: methodology)

  – Unified process (UP)

  – Extreme programming (XP)

  – Scrum

- Most processes/methodologies now use Agile and Iterative development

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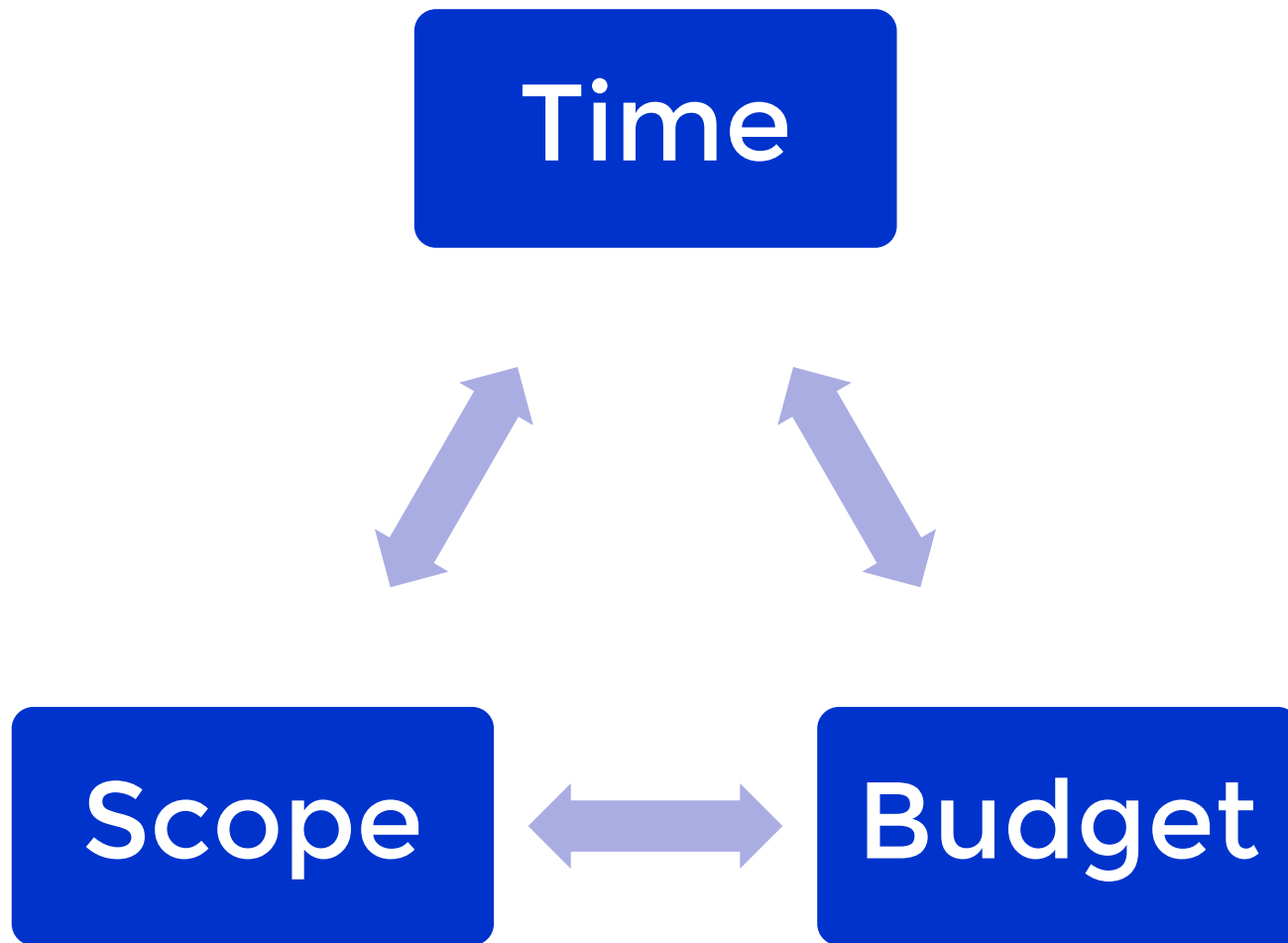OF WOLLONGONG
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Iterative Development

- Agile development – an information system development process that emphasises flexibility to anticipate new requirements during development
  - Fast on feet; responsive to change
- Iterative development – an approach to system development in which the system is "grown" piece by piece through multiple iterations
  - Complete small part of system (mini-project), then repeat processes to refine and add more, then repeat to refine and add more, until done

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Iterative and Agile Systems Development Lifecycle (SDLC)

Core processes	Iterations					
	1	2	3	4	5	6
Identify the problem and obtain approval.						
Plan and monitor the project.						
Discover and understand details.						
Design system components.						
Build, test, and integrate system components.						
Complete system tests and deploy the solution.						

However, constraints….

So, Who are we going to be?

Business Systems Analyst

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A system analyst does…

During this subject you will learn…

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Concepts

- Stakeholders
- Work breakdown structures (WBS)
- Use cases
- Use case diagrams
- Object classes (domain classes)
- Class diagrams
- Design class diagrams
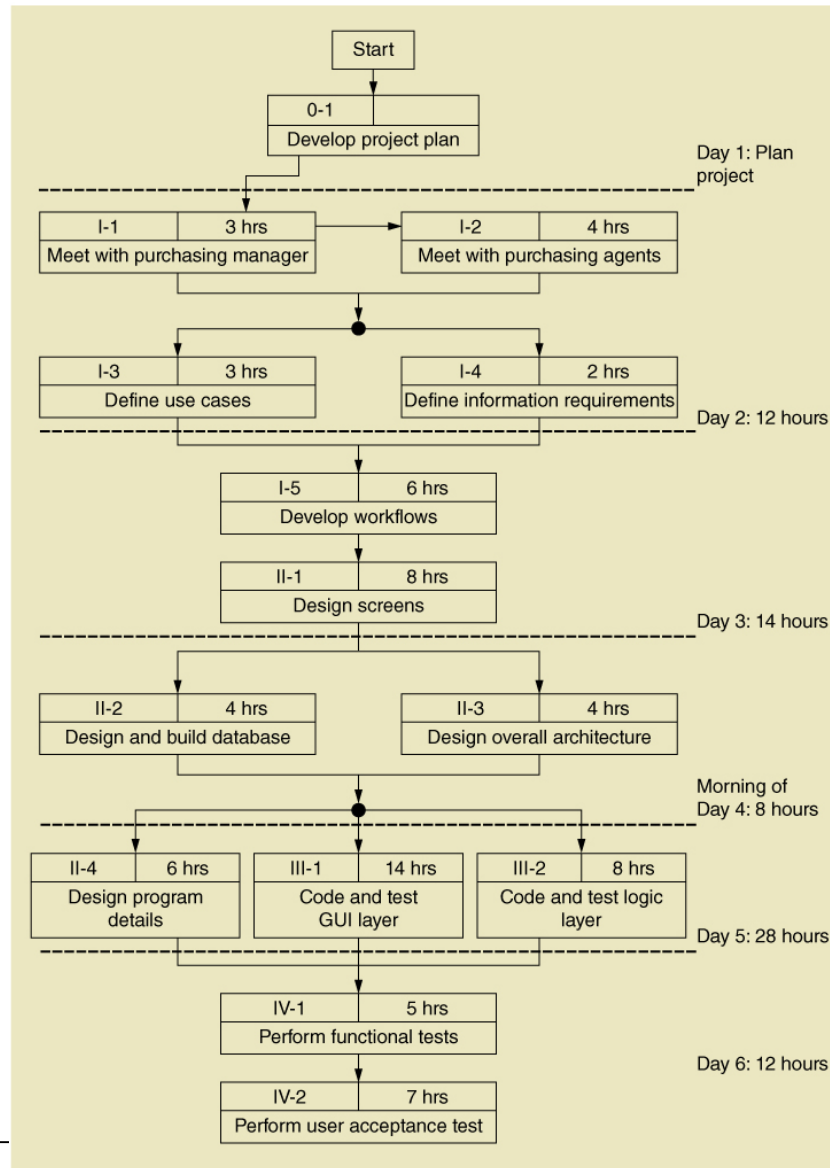- High level structural design (architectural design)

Example: Work Breakdown Structure

Work Breakdown Structure

I. Discover and understand the details of all aspects of the problem.
1. Meet with the Purchasing Department manager. ~ 3 hours
2. Meet with several purchasing agents. ~ 4 hours
3. Identify and define use cases. ~ 3 hours
4. Identify and define information requirements. ~ 2 hours
5. Develop workflows and descriptions for the use cases. ~ 6 hours

II. Design the components of the solution to the problem.
1. Design (lay out) input screens, output screens, and reports. ~ 8 hours
2. Design and build database (attributes, keys, indexes). ~ 4 hours
3. Design overall architecture. ~ 4 hours
4. Design program details. ~ 6 hours

III. Build the components and integrate everything into the solution.
1. Code and unit test GUI layer programs. ~ 14 hours
2. Code and unit test Logic layer programs. ~ 8 hours

IV. Perform all system-level tests and then deploy the solution.
1. Perform system functionality tests. ~ 5 hours
2. Perform user acceptance test. ~ 8 hours

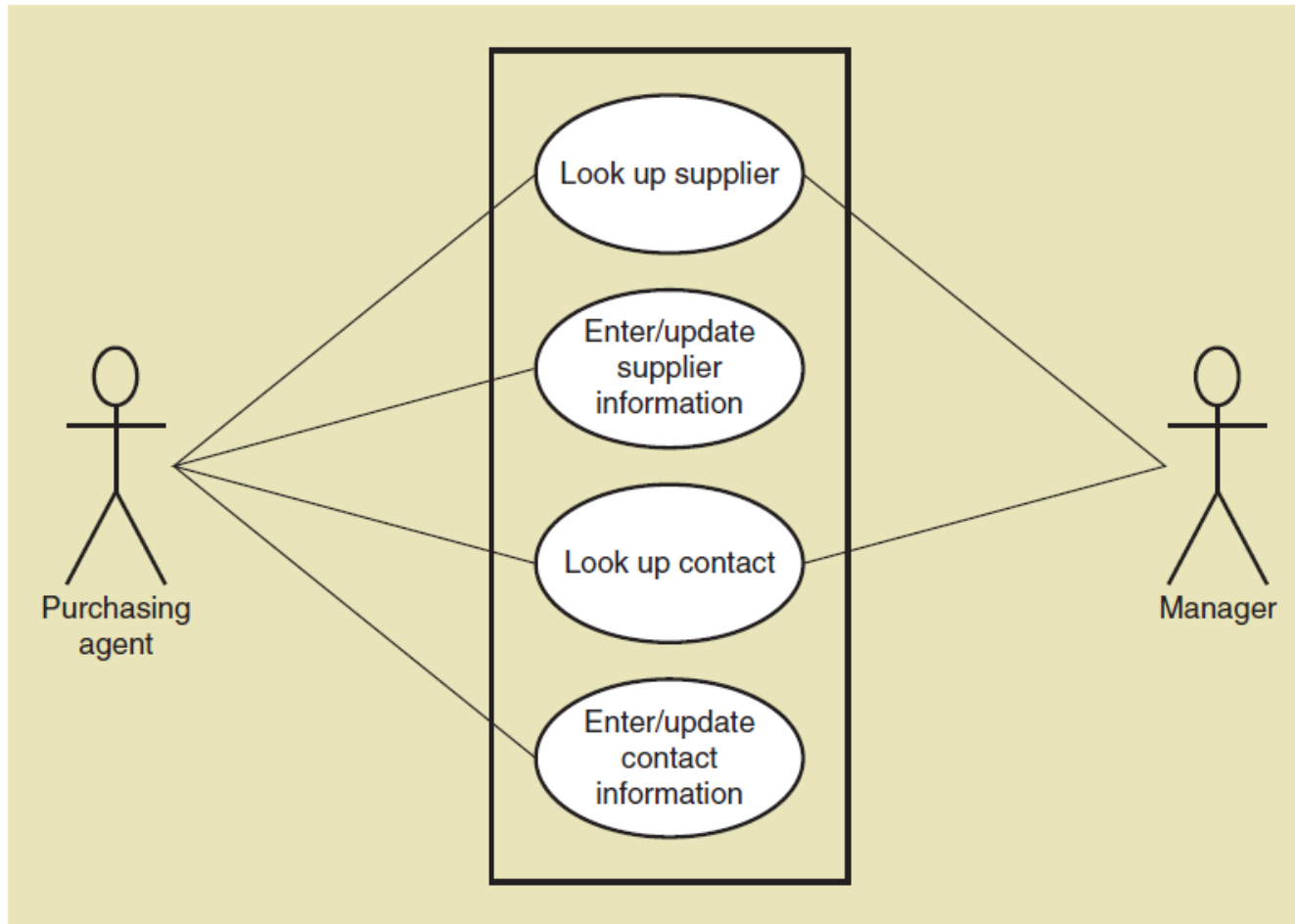# Work Sequence Draft for Iteration

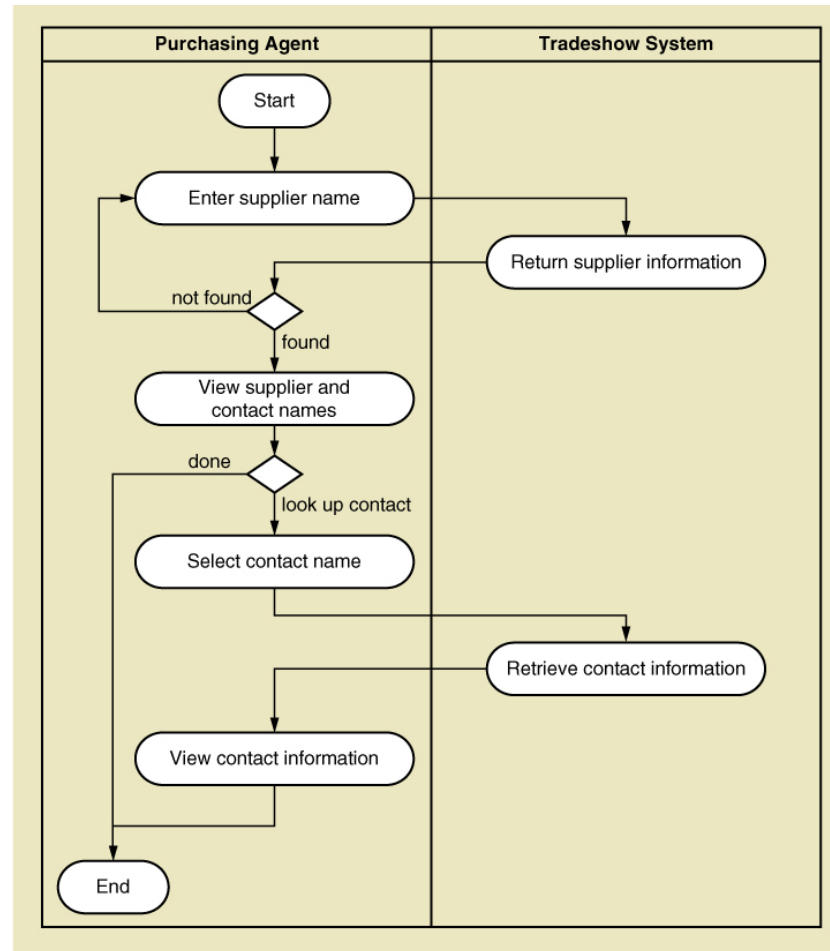# Identify Use Cases

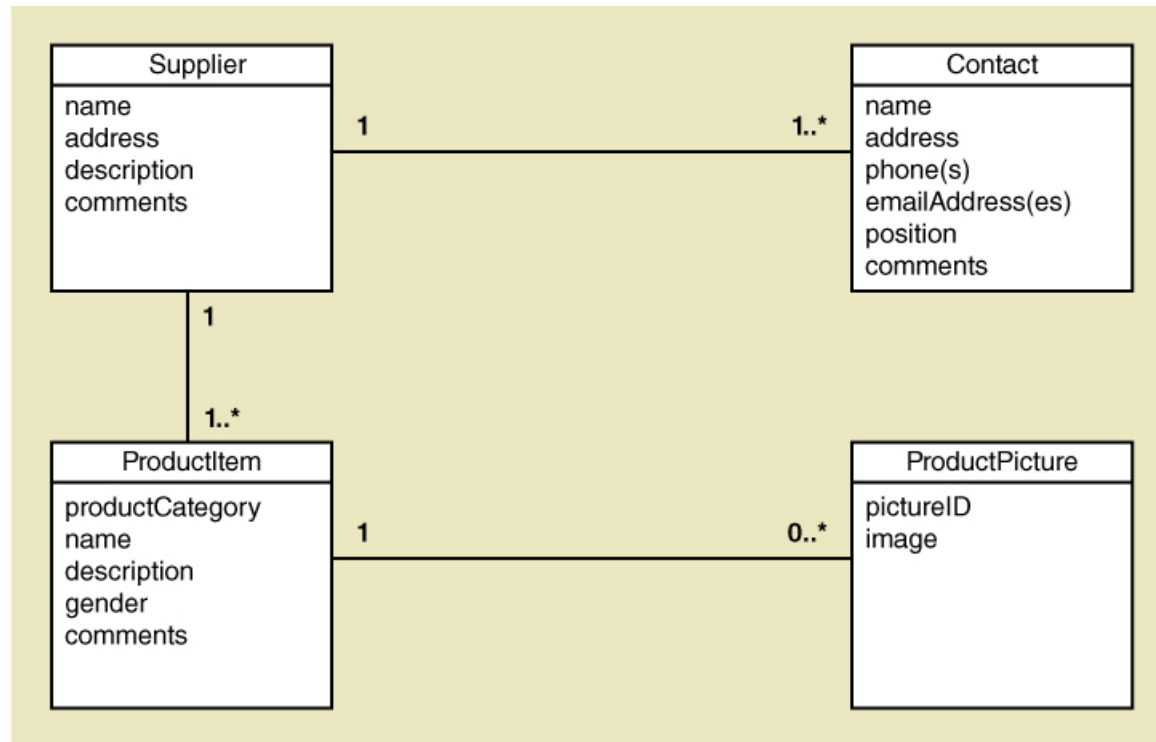| Use Case	Description
Look up supplier	Using supplier name, find supplier information and contacts
Enter/update supplier information	Enter (new) or update (existing) supplier information
Look up contact	Using contact name, find contact information
Enter/update contact information	Enter (new) or update (existing) contact information
Look up product information	Using description or supplier name, look up product information
Enter/update product information	Enter (new) or update (existing) product information
Upload product image	Upload images of the merchandise product

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Use Case Diagram

Activity Diagram (Workflow)

Identify Object Classes

Object Classes	Attributes
Supplier	supplier name, address, description, comments
Contact	name, address, phone(s), e-mail address(es), position, comments
Product	category, name, description, gender, comments
ProductPicture	ID, image

Preliminary Class Diagram

Review Questions

- What is the difference between an information system and a computer application?

- What is the purpose of systems analysis? Why is it important?

- What is the difference between systems analysis and systems design?

- What is the purpose of the system development life cycle (SDLC)?